Notes on Spectrum Session

Larry and Dave presentations
ACAST 5 GHz channel study

- Analysis, simulation/modeling, measurement
- Channel sounding (50 MHz bw): specific values and statistics for all impulse response, freq selectivity and time variation; attenuation and coverage
- Channel class definition

Open discussion

What is the future of MLS?
Lot of MIT C-band work and simulation on MLS (Jim Evans at Lincoln Labs)
Operational MLS at Ohio University
Gary Church – preemption/priority precedence
Coverage/Gain characteristics of airport terminal data comm. System
Related 802.16 and 802.20 standards (WMAN)
What's status of 802.20?
One small spot in the avionics bay – need to provide cost benefit to airlines; also antenna placement of C-band equipment; what are the costs involved?
What technical work needs to be done? Operational concept of how we're going to use the band – perhaps overlay of MLS
How to get airplanes in and out of airports – parallel approaches/comm. Between a/c
Many types of end users – airlines, airport operations, FAA ATC
ILS is very congested same as VHF COM – what is the alternative if MLS spectrum is reallocated?
New aircraft don't have MLS
(Chuck – Honeywell) Possibility of C-band front-end on MMDA; beauty of going to this (5 GHz) band is that there's nobody there; 960-1215 MHz band; ILS GS; and VHF COM are already congested. There are problems (ie transition plan), but probably more solvable than in other bands.
Bruno – what advantages does data link provide on the surface? Lot's of COTS activity in the band. Similar problems being worked.
Need to pay attention to GA community. US has much larger GA than Europe.
FAA working with ICAO to adopt position to reallocate 5 GHz band to AM(R)S
Need to have AM®S allocations for UAV C&C and ATC links
Blackbox & Cockpit imagery, "panic button" may also need to be accommodated
Where will new airport network be implemented? Existing large airports? Possibly start with small uncontrolled, untowered airports for GA use (~5100) that have immediate need for communications. Small airports may yield to totally wireless solution. Start with surface comm. And then evolve to uncontrolled airspace.
Think of large airports as collection of small airports connected via fiber backbone.
Channel sounder work may be delayed by budget, but should have results for some airports by spring.

For spring ICNS develop preliminary ConOps describing how the spectrum would be used and what kinds of systems are feasible. Identify what the technology requirements are (e.g. 5 GHz xmitters, hi-gain electronically steered antennas)
Making 3D image of airport from photos (Hertz imaging?) What are the bandwidth requirements (airport ops vs airline), channel plan. What is the actual real-time data rate reqt. Experience using ARINC to xmit flight plan changes and weather reports.
Security consideration may drive up spectrum requirement (eg spread spectrum).
FAA Concept paper on ANLE system.